Trigger Workshop Introduction and Goals

P. Wilson
Trigger Workshop
8/17/00

- Establish goals and detailed for commissioning the Trigger Systems
- Plan for workshop:
  - Assess current status and near term capabilities
  - Discuss Specific commissioning tasks (e.g. timing)
  - Discuss tools needed for commissioning (TRIGMON etc)
    - What tools are needed to easily debug your system?
    - Can others easily use these tools?
  - Discuss organization for Trigger operation
  - Other topics?
  - Establish plan for commissioning run

Detector Capabilities

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System		Coverage (Sept 1, 2000)	Limitation
Tracking	COT	~60° < f < 120° , ~240° < f < 300°	TDC
		fill in remainder during access	TDC
	SVX4	45° < f < 105°	Cooling
Muon	CMU	Full	
	CMP	Top, Bottom, South wall	
	CMX	SE, SW + 1 wedge of miniskirt	TDC
	IMU	½ of IMU	TDC
Calorimeter	CEM	Full	
	CHA	Full	
	WHA	Full	
	PEM	Full	
	PHA	Full	
	CES	45° < f < 75° (West)	electronics
	PES	50-100% of East Plug	electronics
Luminosity	CLC	Full	
Particle ID	TOF	Partial: Pulse height only	electronics

Trigger Capabilities

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System		Coverage	Trigger
L1	XFT	Full	
	XTRP	$30^o < f < 90^o$	$30^o < f < 90^o$
	Cal	Full	Full
	CMU	Full	Full
	2-Track	none	
	Global		Full
L2	Cal	Full	Full
	SVT	$45^o < f < 105^o$	
	XCES	$45^o < f < 75^o$	
	Global	2/4 processors	Primarily Tagging
L3		Full	Primarily Tagging

Commissioning Run

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- Last discussed plans in detail at CDF week:
  - Expected detector and Trigger capabilities were about right – just a month later
  - About 5 weeks later for roll-in (9/5)
  - Colliding beam before Roll-In is uncertain
  - Expect ~4 weeks of colliding beam instead of 10 weeks

Date	9/4	9/11	9/18	9/25	10/2	10/9	10/16	10/23	10/30
Week	-2	-1	1	2	3	4	5	6	7
	Roll-In		Proton Only		Collisions				Roll-Out
L					10^{29}-10^{30}				

Structure of Commissioning Run

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- Run Plan from CDF week was composed of 5 periods:
  A. Observe first collisions (2 weeks)
  B. Subsystem commissioning (5 weeks)
  C. Getting detector stable (1 week)
  D. Data for offline analysis (2 weeks)
  E. Optional
- Given the anticipated length of colliding beam, we should focus on the first two periods

Trigger Goals for Commissioning Run

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- The following are modest expectations for the commissioning run
  - Set priorities for these and/or other goals Friday afternoon
- Time-in systems with beam:
  - Synchronize clock with beam pickups
  - Time in Front-ends: ADMEM, TDCs
  - Relative timing of Front-end-Trigger established for cosmics should carry over to beam data – need to verify with beam

Trigger Goals for Commissioning Run

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- Establish operation of L1 Trigger system functionality
  - Calorimeter single tower trigger and Sum Et triggers
  - Muon stubs timed in
  - Tracking slice COT-XFT-XTRP to Muon/Cal Triggers
- Capture data in L2 Processors, simple tagging/prescaling
  - Read-in L1 and XFT info
  - Cluster and ISO cluster operation
  - SVT for instrumented region

Integration Tests Before Commissioning Run

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- Only 2 full weeks before start of Roll-in!
  - During much of roll-in period connection to detector systems will not be available
  - Get your system into the Integration tests ASAP